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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kwang Jac Lim

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EXAMINER

CHO, UN C

ART UNIT

PAPER NUMBER

2617

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/717,799	Applicant(s) LIM ET AL.	
	Examiner Un C. Cho	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 14 and 18 is/are rejected.
- 7) ☒ Claim(s) 6-13 and 15-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, 14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilmore et al. (US 5,835,847) in view of Katz et al. (US 7,072,692 B1).

Regarding claim 1, Gilmore discloses a) being periodically reported, from mobile stations, of average receiving power levels of beam pilot signals transmitted in a plurality of beams (Gilmore: Col. 7, lines 31 – 42); b) estimating a path gain between beams and the mobile station based on the reported average power levels of beam pilot signals (Gilmore: Col. 6, line 46 through Col. 7, line 30).

However, Gilmore as applied above does not specifically disclose c) determining priorities for packets to be transmitted to each of the mobile stations; d) selecting a beam requiring the lowest transmission power for transmitting the packet having the highest priority, and allocating the lowest power required for satisfying a predetermined packet reception quality when the packet is transmitted in a selected radio resource, by using the path gain estimated for each of the mobile stations; and e) if the selected radio resources or the

transmission power that can be used are not sufficient or if there is a packet to be allocated, performing the step c). In an analogous art, Katz remedies the deficiencies of Gilmore by disclosing such limitation in Col. 11, line 48 through Col. 12, line 57. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the technique of Katz to the system of Gilmore in order to provide an improved method for directional radio communication.

Regarding claim 3, Gilmore in view of Katz as applied above discloses that the path gain between the mobile station and an adjacent beam is estimated based on a ratio of the pilot transmission power to the average received power of the pilot signal reported from the mobile station (the gateway control processor uses the measurements, coming from mobiles stations, to determine an appropriate level of pilot signal power for transmission; Gilmore: Col. 7, lines 31 – 42).

Regarding claim 4, Gilmore in view of Katz as applied above discloses wherein the radio resource is divided into a predetermined number of frames, wherein in a time domain, each frame is divided into one or more time slots, a beam signal is transmitted over multi-carrier (TDMA); in a frequency domain, each frame is divided into one or more frequency slots, a signal is being transmitted over multiple subcarriers (FDMA); and a code domain, each frame is divided into one or more spreading codes, a signal is transmitted using a

spreading code, and wherein each frame is divided by a combination of two or thereof the frame division methods (CDMA) (Gilmore: Col. 1, lines 15 – 37).

Regarding claim 14, Gilmore in view of Katz as applied above discloses wherein the transmission mode of radio resources is one selected from one or more transmission modes which are combinations of modulation mode and encoding mode; and the radio resources are allocated using one of the transmission modes as a basic transmission mode in a predetermined case, and if there are usable radio resources but the power is not sufficient to perform the basic transmission mode, a transmission mode having a low transmission rate is used to transmit the selected packet, or if the usable radio resources are not sufficient but the power can be used sufficiently, a transmission rate having a high transmission rate is used to obtain additional radio resources and transmit a packet selected by the additional radio resource to a user having the largest GIR (Gilmore: Col. 11, line 64 through Col. 12, line 44 and Katz: Col. 11, line 48 through Col. 12, line 57).

Regarding claim 18, the claim is interpreted and rejected for the same reason as set forth in claim 1.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilmore in view of Katz as applied to claim 1 above, and further in view of Lalezari (US 6,759,978 B2).

Regarding claim 2, Gilmore in view of Katz as applied above does not specifically disclose wherein the beams adjacent to the mobile station belong to an active beam set including a primary beam having the largest average received SINR of a pilot signal and a beam corresponding to a pilot signal whose pilot SINR ratio is larger than or equal to a value obtained by multiplying a fixed rate smaller than 1 by the largest pilot SINR. In an analogous art, Lalezari remedies the deficiencies of Gilmore in view of Katz by disclosing such limitation in Col. 3, line 63 through Col. 4, line 37. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the technique of Lalezari to the modified system of Gilmore in view of Katz in order to provide an efficient system to control over beam direction as well as the link margin due to the increased gain of such currently receiving antennas.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilmore in view of Katz as applied to claim 1 above, and further in view of Castellano (US 6,674,750 B1).

Regarding claim 5, Gilmore in view of Katz as applied above does not specifically disclose wherein the packet allocation is performed based on service requirements, and the packet allocation includes reserved allocation and shared allocation, wherein in case of a service using the reserved allocation, radio resources required for transmitting the packet are allocated in each frame when the service is established initially, and if there is an additional packet to be

transmitted, reserved radio resources are used allocated by the shared allocation, and wherein the radio resources are selected among the radio resources that not used for the other reserved allocation in the current frame. In an analogous art, Castellano remedies the deficiencies of Gilmore in view of Katz by disclosing such limitation in the Abstract (allocating a portion of a data transmission bandwidth of the shared bus, to the transmission of packet data). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the technique of Castellano to the modified system of Gilmore in view of Katz in order to provide a common bus structure for the integration packet/TDM traffic.

***Allowable Subject Matter***

5. The following is a statement of reasons for the indication of allowable subject matter:

Please see previous office action mailed on 4/10/2007.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1 – 5, 14 and 18 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2617


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Un C. Cho whose telephone number is (571) 272-7919. The examiner can normally be reached on M ~ F 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on (571) 272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Un C Cho  
Examiner  
Art Unit 2617

7/17/07 *UC*

  
GEORGE ENG  
SUPERVISORY PATENT EXAMINER